

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

HADA et al

Atty. Ref.: 2018-480

Serial No. To Be Assigned

Group: unknown

Filed: January 2, 2002

Examiner: unknown

For: CONTROL METHOD FOR GAS CONCENTRATION SENSOR

* * * * *

January 2, 2002

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

PRELIMINARY AMENDMENT

Please amend the above-identified application as follows:

IN THE SPECIFICATION

Please insert the following paragraph on page 1, after the Title:

--This application is a division of Application No. 09/064,163, filed April 22, 1998, the entire content of which is hereby incorporated by reference in this application.--

IN THE CLAIMS

Kindly cancel claims 1-16 without prejudice or disclaimer.

Kindly add the following new claims:

--17. (New) A method of controlling a gas concentration sensor comprising the steps of:

detecting an impedance of the sensor from a voltage applied to the sensor and a current generated by the sensor;

detecting a gas concentration from the current generated by the sensor;

changing the detected impedance in accordance with a predetermined operating parameter of the sensor in the step of detecting the impedance; and

limiting a change of the detected impedance to be within a predetermined change rate.

18. (New) A method of controlling a gas concentration sensor as in claim 17, wherein a range for limiting the change of the detected impedance is variable with operating conditions.

19. (New) A method of controlling a gas concentration sensor as in claim 18, wherein the range is increased as the change of the detected impedance is increased.

20. (New) A method of controlling a gas concentration sensor comprising the steps of:
detecting an impedance of the sensor from a voltage applied to the sensor and a current generated by the sensor;

detecting a gas concentration from the current generated by the sensor;

changing the detected impedance in accordance with a predetermined operating parameter of the sensor in the step of detecting the impedance; and
outputting a signal of the detected impedance through a low pass filter.

21. (New) A method of controlling a gas concentration sensor comprising the steps of:
detecting an impedance of the sensor from a voltage applied to the sensor and a current generated by the sensor;
detecting a gas concentration from the current generated by the sensor; and
limiting the detected impedance to a limited range of change when the detected impedance changes more than a predetermined rate.

22. (New) A method of controlling a gas concentration sensor comprising the steps of:
detecting impedances of the sensor from a voltage applied to the sensor and a current generated by the sensor a plurality of times; and
using an average of at least two of the detected impedances as a current detected impedance. --

REMARKS

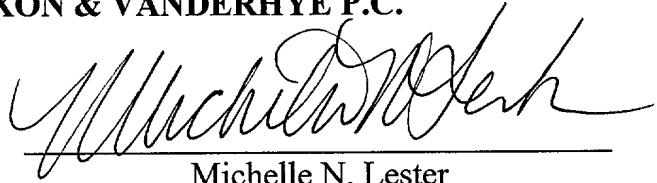
It is respectfully requested that the drawing corrections indicated in red on the attached copies of Figures 1, 32A and 32B be approved for entry in this application.

An early and favorable Action on the merits of claims 17-22 is respectfully requested.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____



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Attention: Chief Draftsperson

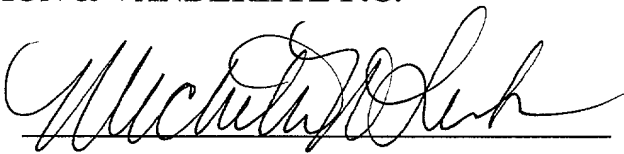
**REQUEST FOR APPROVAL OF
PROPOSED DRAWING AMENDMENTS**

Approval is requested for the proposed drawing amendments shown in red on the
attached photocopy of Figures 1, 32A and 32B.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By:



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FIG. 1

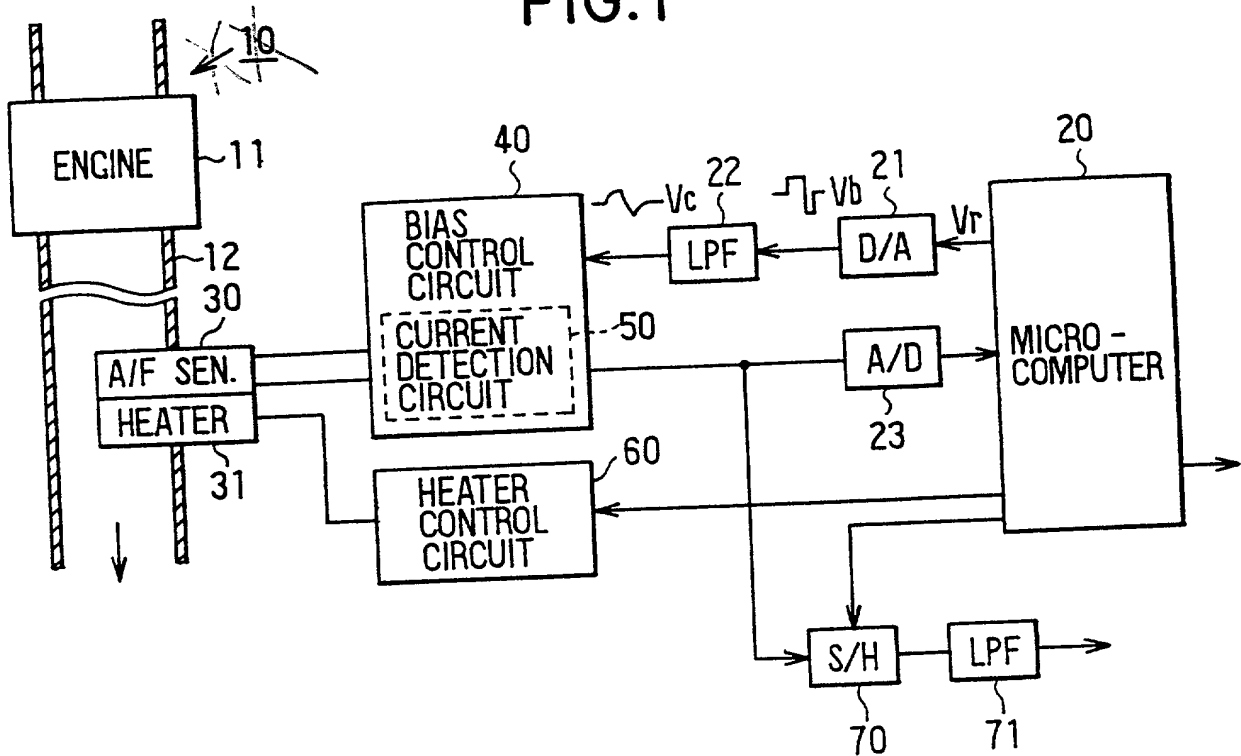


FIG. 4

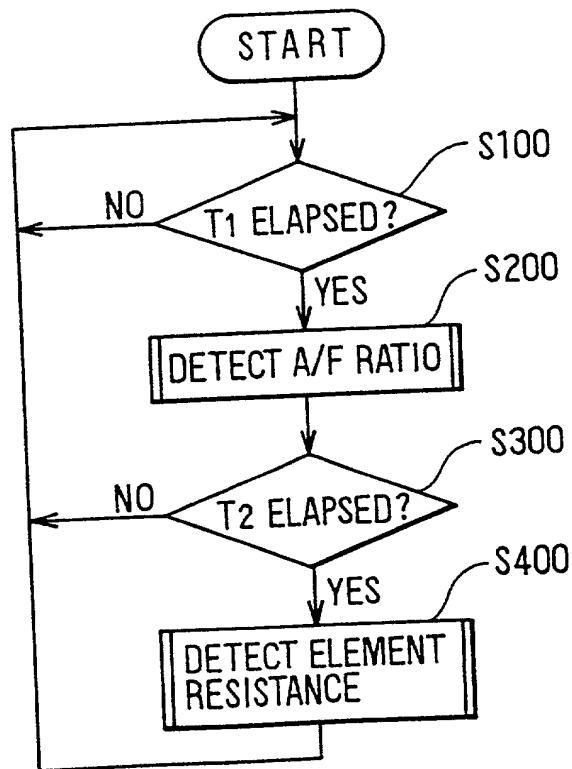


FIG. 28

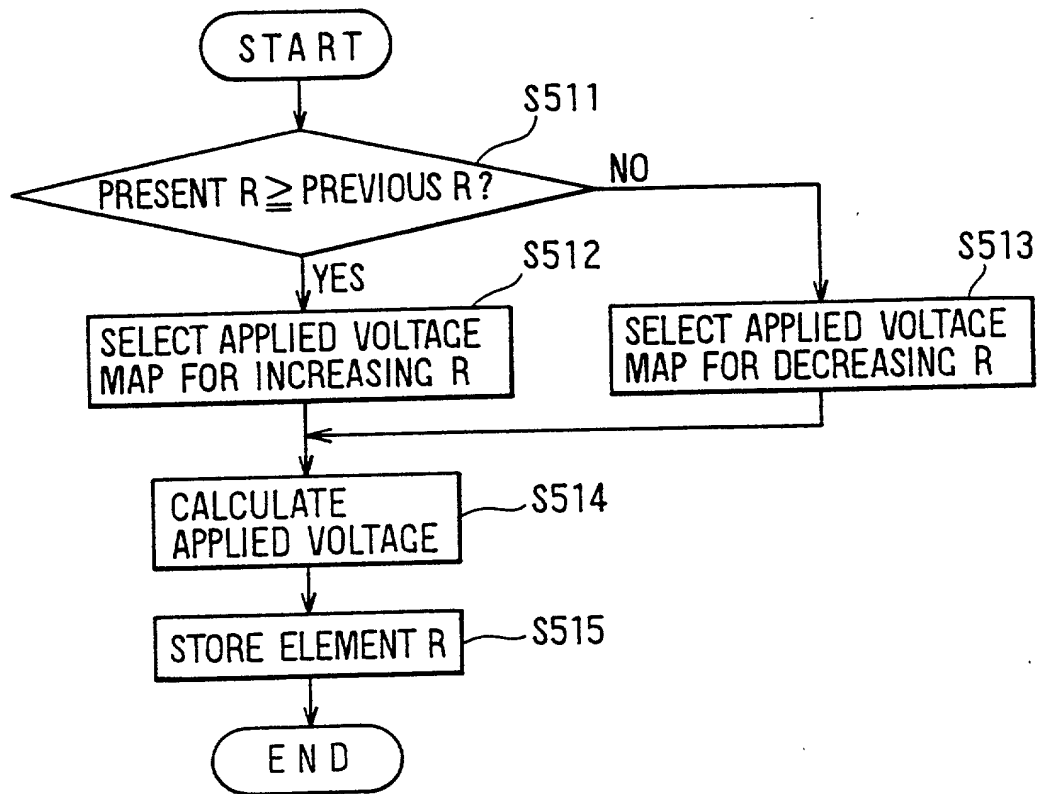


FIG. 32A
Prior Art

FIG. 32B
Prior Art

